

No.		Organization	Document	Section	Comment	Date
		DEQ	EECA	1.2	DEQ's Environmental Cleanup Statute and Rules should be identified as an ARAR.	
		DEQ	EECA	1.2	Page 1-3, Section 1.2. If surface water is considered a drinking water source, then the Safe Drinking Water Act (42 USC 300f et seq.) may be considered a relevant and appropriate ARAR.	10/18/2005
		DEQ	EECA	1.2	The City of Portland Greenway Permit standards may be ARARs for the EE/CA remedial alternatives.	
		DEQ		1.2	The following State regs should be included as potential ARARs: 1) Lower Willamette River Management Plan (ORS 273.045); 2) Hazardous Waste Regulations (ORS 466.005-225); State Removal Fill Laws & Regulations (ORS 274.040, 0.43, .922, & .944); Certification of Compliance with Water Quality Requirements & Standards (ORS 468.035); State Water Quality Standards (ORS 468B.048); & Oregon Department of Fish & Wildlife Fish Management Plans for the Willamette River (OAR 635.500).	
		DEQ	EECA	General	The screening levels proposed in the EE/CA Work Plan should be similar to screening levels used in the Portland Harbor in-water RI/FS and the screening levels values (SLVs) used in the Joint Source Control strategy (JSCS). Screening levels should identified & used in screening all pertinent exposure pathways & environmental media (i.e., sediment, transition zone water (TZW), & surface water). Toxicity & bioaccumulation screening levels should be considered for both human & eco receptors.	
				General	DEQ believes that it is critical to have a conceptual three dimensional understanding of sediment and groundwater contamination upland and in river in order to assure appropriate placement and density of additional sampling locations. Groundwater grab samples should be collected from selected and additional borings added to the program to define the extent offshore groundwater plumes.	
		DEQ	EECA	1	Page 1-5. Appendix C includes calculations for human health in addition to wildlife.	10/18/2005
		DEQ	EECA	2.1	Page 2.1. Based on a 7/9/03 DEQ memo, mean high water in Portland Harbor was "define" as 8 feet CRD = 4.8 feet COP = 6.2 feet MSL, and represents the boundary between upland and in-water activities. The EE/CA work plan states that the mean high water is at 18.1 feet COP, and the basis is not clear as well as the project implications. Copy of 7/9/03 DEQ memo is attached.	10/19/2005
		DEQ	EECA	3	Section 3 does not provide the reader with a clear working conceptual model of site conditions. Key figures from previous documents or the Remedial Investigation report should be provided to illustrate site conditions. A simple schematic block diagram illustrating contaminant sources, pathways, and extent of contamination will help the reader develop an understanding of the site. This figure should be supported by appropriate maps and cross-sections showing the extent of known soil, sediment, and groundwater contamination. These figures should include isoconcentration contours based on appropriate screening level values presented in the Joint Source Control Strategy (DEQ/EPA September 2005). It is suggested that multipliers of SLVs (i.e., 10x, 100x) be shown to help the regulatory team determine appropriate the appropriate boundary of the early action.	10/19/2005
		DEQ	EECA	3	Section 3 could be improved significantly by providing selected figures or tables from each of the previous investigations or by providing specific references to the important figures or tables in these documents. As presented, the discussion/summaries presented in the EE/CA raise more questions for the reader than presenting what is known about the site and allowing the reader to understand why the primary focus of this document is on DDT and chlorobenzene. Other issues are eluded to (e.g., other groundwater plumes, other contaminants of interest, DNAPL), but not discussed or the basis for not considering them in the EE/CA not presented.	

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		DEQ	EECA	3.1	Arkema has performed numerous upland investigations in addition to those referenced in Table 3-1. For example, additional investigations have been performed prior to and during implementation of various upland interim remedial measures (IRMs). These investigations/IRMs should be listed in the table and references provided. If possible, it would be beneficial to the regulatory team if the upland RI report was submitted concurrent with or prior to resubmittal of the revised EE/CA work plan.	
		DEQ	EECA	3.1	Page 3-1, Footnote - DEQ concurs that groundwater pH at many of the upland facilities in the Portland Harbor area is naturally below 6.5. The measured pH range of 6.1 to 6.4 is within the range of natural pH measured at other upland sites.	10/19/2005
		DEQ	EECA	3.1.9	Page 3-8, Groundwater analytical detection limits for perchlorate at stations between docks 1 and 2 were elevated due to "interferences". As a result it is uncertain if the smaller perchlorate groundwater plume originating in the vicinity of the former DDT process building extends into the river.	10/19/2005
		DEQ	EECA	3.2.1	A figure illustrating the top of the basalt surface would be useful in developing the conceptual model of the site and for screening/evaluating potential remedial technologies for the early action.	
		DEQ	EECA	3.3	Available information on the presence of DNAPL and its physical properties should be summarized.	
		DEQ	EECA	3.5	Page 3-30. In the equation for HQ _i , the summation should be from i=1 to Ni.	10/18/2005
		DEQ	EECA	3.5	Page 3-31, Section 3.5.3.3. The first bullet should refer to contact with soil or sediment, because it includes dermal contact in addition to incidental ingestion.	10/18/2005
		DEQ	EECA	3.5	Page 3-32, second paragraph. Screening levels based on both incidental ingestion and dermal contact are not overly conservative because both routes of exposure are reasonably likely, and will occur concurrently. The selection of exposure scenarios is very important, and needs to be discussed in more detail than a footnote.	10/18/2005
		DEQ	EECA	3.5	Page 3-33, top paragraph. The choice of an excess cancer risk level of 10 ⁻⁶ for developing screening principal threat levels may be appropriate, but be aware that DEQ will use an acceptable excess cancer risk level of 10 ⁻⁶ for final remediation.	10/18/2005
		DEQ	EECA	3.5	Page 3-33, indirect exposure. Sediment screening values developed for consumption of water and of aquatic organisms will likely be more restrictive than the screening values for sediment contact developed in this workplan. If the lower screening levels are not considered now, it could mean that sediment concentrations remaining after early action remediation may exceed acceptable sediment levels.	10/18/2005
		DEQ	EECA	3.5.3.2 & 3.5.3.3		
		DEQ	EECA	3.6	Page 3-34, transition-zone water. The screening of transition-zone water in Table 3-9 is conducted using only acute criteria. Screening on chronic criteria is also important.	10/18/2005
		DEQ	EECA	3.6	Page 3-37, Section 3.6.3.2. Appendix C includes screening values for many scenarios, including recreational beach users and various fishers. This portion of the report limits the screening values to dockside worker or transient. The fisher scenarios are still relevant offshore of the site, so the information presented in Appendix C should be evaluated in the report.	10/18/2005
		DEQ		4	This section should be expanded to include a site hydrogeologic conceptual site model. This section should be supported by appropriate figures (i.e., block diagrams, cross-sections, isoconcentration contour maps) to clearly illustrate the nature and extent of known contamination at the facility.	

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		DEQ	EECA	4.1.2.1	Page 4-3, DEQ identified an interim chronic screening level value for perchloate to ARKEMA (0.2 mg/L). A copy of the tech memo deriving this value is attached. The literature referenced by ARKEMA (Dean et al. 2004) established a 20 mg/L acute value for perchlorate also establishes a chronic value of 9.3 mg/L. Given the large variation between the DEQ chronic value and the literature value, additional regulatory review concerning the acute value is warranted. Also, mortality may not be the only end point of significant concern for perchlorate. Amphibian development is reported to be significantly impaired at sub mg/L levels.	
		DEQ	EECA	4.3	Page 4-8, Section 4.3, and Figure 4-1. The fisher scenarios presented in Appendix C are relevant for sediment offshore of the site, and should be included in the conceptual site model. Consumption of fish is not limited to workers; it is more likely that other populations (such as recreational fishers) will be consuming fish caught adjacent to the site. For the consumption-of-biota scenarios, it should be clarified that screening values will be calculated in the future as these pathways are evaluated in the Portland Harbor in-water risk assessment.	10/18/2005
		DEQ	EECA	4	Figure 4-2. Ingestion of surface water, as distinct from incidental ingestion of surface water, should be included as a relevant pathway for mammals and birds. Dermal contact with sediment is also relevant for mammals and birds.	10/18/2005
		DEQ	EECA	4	Figure 4.4. The groundwater chloride plume should be shown on the figure.	
		DEQ	EECA	4	Figure 4-4. The elevated pH/arsenic plume in the Chlorate Plant area should be shown in the figure. Elevated pH/arsenic levels are present in the riverbank wells MWA-34i and MWA-52i. The riverward extent of this plume is unknown.	
		DEQ	EECA	4	Figure 4-4. The ammonium perchlorate plume in the Acid Plant Area should be shown on the figure. The riverward extent is uncertain and can be qualified with question marks.	
		DEQ	EECA	4	Figure 4-4. From the sampling locations shown on the figure, it is not clear if the extent of the hexavalent chromium, perchlorate, and DDT plumes have been bounded beneath the river.	10/18/2005
		DEQ		4.1.1 & Figure 4-3	The location of the Lot No. 1 Former DDT Trench should be presented in Figure 4-3	
				4.1.2 & Figures 4-1 & 4-2	Figures 4-1 & 4-2 don't include "stormwater & waste water" unless they are assumed to be included in "surface water".	
		DEQ	EECA	4.1.2.3 & Figure 4-3	Outfalls 1, 2, 3 & 4 should be presented & labeled in Figure 4-3.	
		DEQ	EECA	4.1.2.1	Page 4-4, The high chloride concentrations in groundwater beneath the Salt Dock Area may account for the high sediment bioassay mortality observed in this area.	10/19/2005
		DEQ	EECA	5	It is recommended that surface water sampling be performed as part of the EE/CA investigation to evaluate base-line conditions prior to implementation of the EA and to aid in the evaluation of potential early action alternatives. This data will also be applicable for monitoring requirements established in the 401 Certification. DEQ recommends Arkema implement a surface water monitoring program using both semi-permeable membrane devices (SMPDs), to collect time-integrated samples for DDT (and break down products), dioxin/furans, PCBs, SVOCs, etc., and grab samples.	

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		DEQ	EECA	5	The following data gaps should be included in the EE/CA Work Plan: 1) physical characteristics (e.g., information regarding bankline & nearshore slope stability); 2) human health & ecological risk characteristics (i.e., screening levels to determine RA area & removal action goals); 3) hydrogeologic characteristics; 4) recontamination source characteristics; & 5) hydraulics & sedimentation characteristics.	
		DEQ	EECA	5	Proposed sediment quality cores and geotech cores should be advanced to basalt. This information may be needed to define the extent of groundwater and/or sediment contamination and may be needed to evaluate potential dredging alternatives, barrier wall installation, or coffer dam construction.	
		DEQ	EECA	5.4	It is unclear from the data presentation that additional data gaps do not exist. By presenting available data in both map and cross-sectional view and contouring the data using multipliers (e.g., 10x, 100x) of SLVs it will be more apparent where additional surface and subsurface sediment data is needed, as well as additional groundwater or transition zone water data.	
		DEQ	EECA	5.6	It is not clear that additional groundwater or transition zone water is not needed as part of the EE/CA investigation without a clear presentation of the available data. Available data should be reviewed and appropriately presented in map and cross-section view to define potential data gaps and to demonstrate the groundwater pathway is adequately understood for the purposes of the EE/CA.	
		DEQ	EECA	5.7	Expand the section discussion to include the stormwater pathway, river bank erosion and deposition of contaminated sediment and what steps/monitoring ARKEMA plans for these sources.	
		DEQ	EECA	6	The up and down stream extent of DDT impacts in the riverbank fill have not been determined outside of the Dock 1 and Dock 2 areas. This is an existing data gap that is on DEQ's list to have Arkema address as part of the uplands source control work. It is not clear at this time whether Arkema will deal with the river bank as part of the EE/CA or upland FS. DEQ normally views this as an upland responsibility. However, it is suggested that this data need be identified in EPA's comments. This will ensure that an early dialog occurs about when this data is obtained and whether Arkema conducts the bank characterization and source control under DEQ or EPA lead.	
		DEQ	EECA	6.1.1.2	Page 6-2, Storm water monitoring data shows elevated levels of hexavalent chromium in Outfall #004. Existing sediment data should be reviewed to determine if there is adequate data to determine if chromium has accumulated to levels of concern near the outfall. Additional sediment samples should be located in this area for chromium if existing sediment data is inadequate.	
		DEQ	EECA	6.1	Page 6-6, last paragraph. The purging of sediment bioassay samples may be relevant to account for toxicity related to soluble chemicals such as chloride in order to characterize toxicity due to chemicals sorbed to sediment. However, the toxicity of soluble chemicals (such as perchlorate, chlorobenzene, and hexavalent chromium) also needs to be evaluated. It is not clear if static sediment bioassay tests (without purging) will adequately characterize toxicity due to discharges of chemicals in groundwater.	10/18/2005
		DEQ	EECA	6.1	Page 6-9, geo-spatial evaluation. DEQ has not agreed that three or more adjacent stations showing toxicity are required to identify remediation zones.	10/18/2005
		DEQ	EECA	5.3 and 6.	Without appropriate concentration maps and cross-sectional depictions of the known contamination at the site and within the sediments, it is very difficult to determine if the proposed analytical strategy is adequate. Selected samples should also be analyzed for PCBs, dioxins/furans, and SVOCs to supplement the existing Arkema and LWG data.	

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